other participation controllers. Based on the capability parameters of its own storage as well as the parameters received from the other storages participating in the power sharing, the participation controller **21** calculates a power sharing ratio, e.g. how much (e.g. percentage) of the total amount of power which needs to be injected into the microgrid for stabilizing it should be injected by its own storage **2**. Based on this ratio, the participation controller **21** sends control signals to the primary control **22** which then executes the control of switches in the converter **23** for injecting the proper amount of power from the energy storing device **4**. For instance, the participation controller **21** may use the power sharing ratio for calculating a gain which is sent with the control signals to the primary control **22**. In some embodiments of the present invention, the participation controller **21** transmits also the power sharing ratio to the other energy storages participating in the power sharing, and thus also receive the corresponding power sharing ratios calculated by the other participation controllers. This may have the advantage of allowing each of the participation controllers to check its calculations with the calculations of the other participation controllers. In some embodiments of the present invention, the participation controller may also receive information about failures etc. of other energy storages **2**, typically from the failed energy storage's participation controllers or from another element in the microgrid **1**. Such a failure message may e.g. inform the participation controller that the failed energy storage is no longer able to participate in the power sharing, or is only able to participate to a specified degree. The participation controller **21** may then account for this when calculating its power sharing ratio.

[0031] FIG. **3** illustrates another embodiment of an energy storage **2**, in which an embodiment of the primary control **22** is shown in more detail. The participation controller **21** is as described in relation to FIG. **2**, and calculates droop gains, denoted m for the calculation of the real (also called active) power reference P_{ref} and n for the calculation of the reactive power reference Q_{ref}, which are sent to a droop controller of the primary controller **22** as information in the control signals. The frequency f_{meas} and the voltage V_{meas} are measured at a point in the microgrid **1** which is close to the point at which the energy storage **2** is configured to inject current in the microgrid. These measured values are compared to reference setpoint values to obtain the deviations Δf and ΔV. Based on these deviations and the gains m and n received from the participation controller, the power references P_{ref} and Q_{ref} are calculated, e.g. as $P_{ref}=m\times\Delta f$ and $Q_{ref}=n\times\Delta V$, see also FIGS. **4** and **5**. In a current reference generation module in the primary control **22**, the power references are compared with corresponding measured power injection values of the energy storage, P_{meas} and Q_{meas}, to calculate the real power current reference i_{dref} and the reactive power current reference i_{qref} (the d and q designations for the d and q axes used in control). The current references are then, in a current control module in the primary control **22**, compared with the corresponding measured injected currents i_{dmeas} and i_{qmeas} to produce pulse-width modulation (PWD) control signals to the VSC **23** for controlling the current injected into the microgrid **1** from the energy storing device **4**.

[0032] FIG. **4** illustrates how the active power references P**1**, P**2** and P**3** may be calculated for three energy storages (storage **1**, storage **2** and storage **3**) participating in power sharing for injecting the total active power P=P**1**+P**2**+P**3** into the microgrid based on the calculated frequency deviation Δf and the calculated respective gains m**1**, m**2** and m**3** of the three energy storages. m**1**:m**2**:m**3** are proportional to P**1**:P**2**:P**3** in accordance with the embodiment of FIG. **4**. The slope of the droop is the gain of the feed-back control loop and can be selected (within stability limit) based on energy left in the storage, power rating, or any other constraint. However, it should be noted that the gains need not be linear. Gains of some storages may e.g. be exponential or stair-shaped.

[0033] FIG. **5** illustrates a similar situation as in FIG. **4**, but with a power limit P**1**lim put on the first energy storage (storage **1**). The active power references are then calculated as P=P**1**lim+P**2**+P**3** where the power references P**2** and P**3** of the two other energy storages (storage **2** and storage **3**) are increased in accordance with their respective gain m**2** and m**3** limited power of storage **1**.

[0034] FIG. **6** illustrates a situation with three energy storages (storage **1**, storage **2** and storage **3**) where storage **1** has a lot of spare stored energy which is available for injection into the microgrid, but it is relatively close to its current limit which means that it cannot much increase its injected current. Thus, if the current sharing ratio is based on the available stored energy in each storage, then storage **1** may hit its current limit, e.g. report this as a fault or such to the other energy storages which will have to compensate. For instance, the smaller storage **3** is far away from its current limit and is thus able to increase its current output to compensate.

[0035] FIG. **7** illustrates a situation with the three storages of FIG. **6** where storage **1** is limited in its participation in the power sharing and brought to a fixed power sharing ratio of 20%. Also this may be reported to the other participation controllers as a fault or similar. The power sharing ratios of the other energy storages are adjusted to compensate. In some cases, a storage may be deactivated completely, and the remaining energy storages are informed and compensate. These ratio calculations may also/alternatively be based on different priorities, such as for supplying power to a critical load, a sensitive grid location etc.

[0036] FIG. **8** is a functional illustration of an embodiment of the storage participation controller **21**. In accordance with this embodiment, first the power sharing ratio is calculated based on own and received storage capabilities. Then, the power sharing ratio is adjusted based on any fault messages, e.g. with information of deactivation, limit hitting or failure of any other power storage. Then, the adjusted power sharing ratio is cross-checked with corresponding power sharing ratios received from the other energy storages, and if necessary adjusted to be brought into line with these to obtain a final power sharing ratio which is stored and used to control current injection, and broadcasted to the other energy storages.

[0037] FIG. **9** illustrates an embodiment of a control unit, e.g. the participation controller **21** or storage controller **3** discussed herein. The control unit **21** comprises processor circuitry **91** e.g. a central processing unit (CPU). The processor circuitry **91** may comprise one or a plurality of processing units in the form of microprocessor(s). However, other suitable devices with computing capabilities could be comprised in the processor circuitry **91**, e.g. an application specific integrated circuit (ASIC), a field programmable gate array (FPGA) or a complex programmable logic device